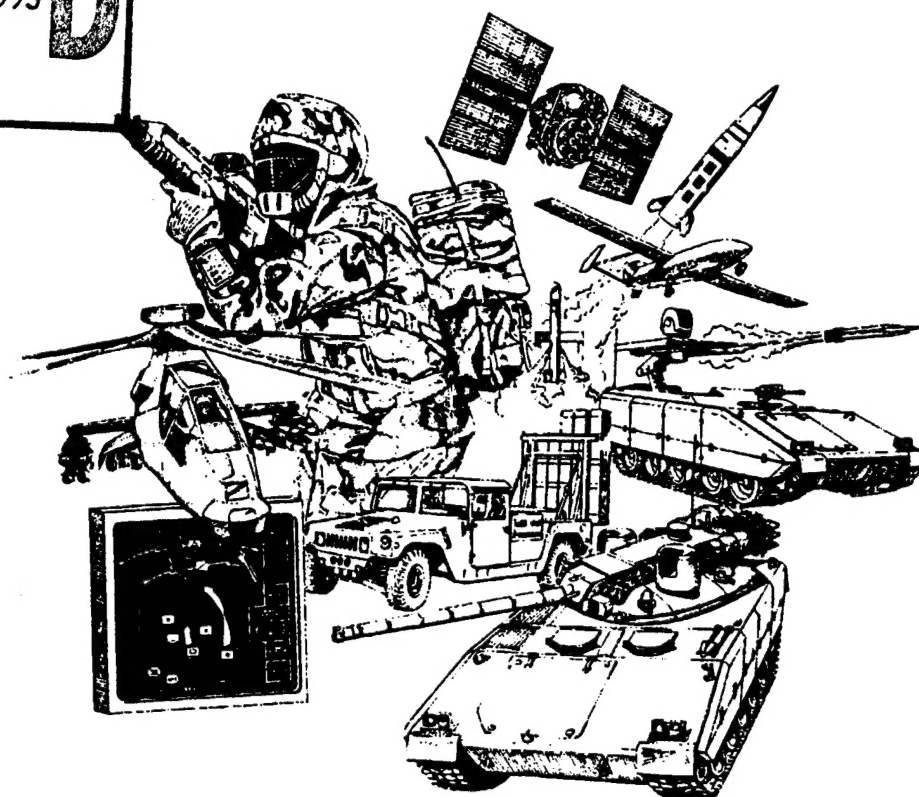
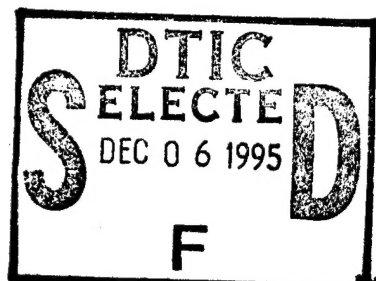


OPERATIONAL CAPABILITY REQUIREMENTS



1 DECEMBER 1994

19951204 016

1 December 1994

Military Operations

OPERATIONAL CAPABILITY REQUIREMENTS

Summary. Operational Capability Requirements (OCR) articulate specific capabilities required to fulfill Battle Lab Concepts. OCRs are intended to provide a war fighting focus for the Army's Science and Technology (S&T) investment.

Applicability. OCRs are employed to assess war fighting value of S&T endeavors and to translate concepts into discrete, subset statements of need. OCRs are utilized by TRADOC Battle Labs (BLs) and Army materiel developers.

Suggested improvements. The proponent for this pamphlet is the Deputy Chief of Staff for Combat Developments. Send comments and suggested

improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Commander, TRADOC, ATTN: ATCD-B, Fort Monroe, VA 23651-5000. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Distribution restriction. Approved for public release; distribution is unlimited.

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Chapter 1 Introduction

1-1. Purpose. This pamphlet describes the Operational Capability Requirements generated by the Army's Battle Labs.

1-2. References.

- a. TRADOC Pam 525-5, Force XXI Operations.
- b. TRADOC Pamphlet 525-200-1, Battle Command Battle Dynamic Concept.
- c. TRADOC Pamphlet 525-200-2, Early Entry Lethality and Survivability Battle Dynamic Concept.
- d. TRADOC Pamphlet 525-200-3, Dismounted Battle Space Battle Dynamic Concept.
- e. TRADOC Pamphlet 525-200-4, Mounted Battle Space Battle Dynamic Concept.
- f. TRADOC Pamphlet 525-200-5, Depth and Simultaneous Attack Battle Dynamic Concept.
- g. TRADOC Pamphlet 525-200-6, Combat Service Support Battle Dynamic Concept.

1-3. Explanation of abbreviations and terms. Abbreviations and special terms used in this concept are explained in the glossary.

1-4. Operational Capability Requirements (OCR) Process.

- a. Operational Capability Requirements are statements of capabilities required for the Army to fulfill the vision articulated within the Army Modernization Objectives, TRADOC Pamphlet 525-5 and the Battle Lab Concepts.
- b. One set of OCRs are written for each Battle Lab and encompass the battlefield dynamic for which the Battle Lab is responsible. Scope of the Battle Lab's OCRs include the horizontal capabilities required of the force as well as relevant branch contributions to these capabilities. OCRs state required and desired capabilities across the full dimension of operations.

c. OCRs are a set of brief statements which break out required capabilities into discrete subsets, the aggregate of which, if fully attained, permits the Army to fulfill the National Military Strategy of winning quickly and decisively, while minimizing casualties.

d. OCRs are derived within the framework of historical lessons learned from operational experiences as well as the opportunities provided from technology exploitation.

e. OCRs are to encompass needs of the force stated within CINC's Integrated Priority Lists (IPL); however, given the lack of singular, analytically defined threat, OCRs are to also include a vision of desired capabilities emanating from technology opportunity.

f. Objective of the OCRs are to focus the Army Science and Technology (S&T) community towards capabilities which will provide technological superiority over any potential adversary. Technological superiority is required despite the potential that adversaries may have access to some state-of-the-art, high technology capabilities available in the world market.

g. Applications:

(1) Operational Capability Requirements are used within the Army Science and Technology Master Plan (ASTMP) process to provide a warfighting focus to technology base funding.

(2) OCRs articulate required and desired capabilities to the materiel developer community internal and external to the Army.

(3) OCRs are employed in Battle Lab S&T Reviews as the yardstick for assessing the warfighting merits of individual science and technology efforts and the total Army S&T program in aggregate.

(4) Perceptions of shortfalls derived from Battle Lab S&T Reviews should generate dialogue with the materiel developers to confirm or resolve the perceptions. Confirmed shortfalls should be considered in budgetary, planning, and programming reviews by the materiel developer.

Shortfalls which exceed Army resource capabilities can be identified to industry to permit discretionary industry investments in needed areas.

(5) OCRs are employed in the Army Science and Technology Objectives (STO) process as the yardstick of warfighting merit. Candidate efforts selected as Army STOs within this process are published in the Army Science and Technology Master Plan as the most important S&T objectives for the Army R&D community. Army STOs receive senior Army leadership oversight and have priority for resourcing.

h. OCR Reviews:

(1) OCRs may be updated at anytime given identification of new needs or opportunities for new capabilities.

(2) As a minimum, OCRs will be reviewed and updated once a year.

(3) The elements to be reviewed and considered for updating the OCRs include:

(a) Battle Labs Concepts.

(b) Operational Lessons Learned, including Center for Army Lessons Learned (CALL) documents.

(c) CINC Integrated Priorities Lists.

(d) Opportunities from technology opportunities. Battle Labs will accrue awareness of opportunities from interaction with the S&T community throughout the course of the year. Intent of Battle Lab interaction with technology should focus on understanding the potential battlefield capability. In many cases, it will be the Battle Lab personnel's operational knowledge of warfighting which may see applications otherwise unforeseen by the materiel developers. It is incumbent upon both the Battle Lab and materiel developer personnel to generate ideas of potential capability from the nexus of technology opportunity and warfighting operational vision. Various forums from which this awareness will occur include:

i. OCR Review Cycle. Following cycle is recommended.

(1) Year Round: Accumulate inputs for OCR updates from sources listed above.

(2) Fall/Winter: Conduct internal Battle Lab Concept and OCR review.

(3) May: Battle Labs publish draft update OCRs and disseminate to other Battle Labs, TRADOC Schools, and the materiel developer community to solicit additional information.

(4) June: Battle Labs publish revised update Battle Lab OCRs incorporating appropriate field input.

(5) June: HQ TRADOC, BLITCD conduct OCR integration workshop to exchange information and consolidate similar OCRs as may be appropriate.

(6) June - July: HQ TRADOC task TRADOC Schools and Battle Labs to review OCRs for Commandant concurrence/comments directly to appropriate Battle Labs.

(7) July: Battle Labs Consolidate inputs and obtain Battle Lab Director approved list.

(8) August: HQ TRADOC submit final draft OCRs to Commanding General TRADOC for approval.

(9) August: Approved OCRs published, distributed, and submitted as input to Army Science and Technology Master Plan (ASTMP).

(10) September - April: Application of OCRs to Battle Lab S&T Reviews, Army STO Review Process, ACT II Broad Agency Announcements, and Battle Lab interactions with industry.

Chapter 2 Battle Command Battle Lab Operational Capability Requirements

Recent and current operations continue to reinforce the concept that future military operations will be increasingly complex and ambiguous. Our quest for decisive victory at minimum cost leads us to exploit technologies to increase lethality, survivability and operational tempo. However, at the heart of it all remains the competent battle commander with an intuitive sense. As operations become more

complicated, battle commanders must make faster, more complex decisions. To make the best decision, the commander requires clear and timely information, decision support aids, and better means of communicating intent and mission. Battle Command Battle Lab OCRs reflect the capabilities required by our future commanders to exercise battle command throughout the force projection cycle in war and Operations Other Than War (OOTW)..

2-1. BC01: Sensors. Timely and accurate sensor information from available sources on forces throughout the depth of a commander's battle space is required to provide a meaningful "picture" of the fluid and dynamic battlefield. All ground, air, sea, and space sensors must be linked into an integrated system with reprogrammable filters in order to satisfy commanders' needs at all echelons for situational awareness across the operational continuum. Sensors must detect and identify active and passive targets underground, above ground, while in water and airborne, or in space; provide warnings of NBC threats and theater missile attack; and provide near real time battle damage assessment. Sensors must continue to do their job, yet be invisible to detection by the enemy. Once detected, they must have protection from enemy fire and should contain preventive measures to protect against engagement from friendly fire. Information collection must occur regardless of natural or man made environmental conditions (weather, terrain, obscurants, electronic warfare, day/night, etc.) for all levels of operations.

(Links to BC02, BC06, BC07, BC09, BC10, BC13, BC18, DSB10, DSB 12, , DBS13, DBS14, DBS16, DBS17, DSA08, DSA09, DSA11, DSA12, DSA13, DSA14, EELS06., EEL12, EELS 13, EEL15, MTD 03, MTD06, MTD11, MTD 12, MTD22, MTD23)

2-2. BC02: Decision Support Software and Tactical Planning Aids. Decision making and operations planning will require expert systems, decision aids, and artificial intelligence capabilities to reduce the time to plan and conduct rehearsals, split-based C4, and medical and logistics support. Processors must provide the commander and staff the ability to take advantage of the information available on the seamless information network in order to improve quality of and reduce time of decision making. Embedded training and simulation tools should be incorporated into the decision support software, for commander/staff training, mission rehearsal, and other tasks that are critical

either because of the complexity of the task or the time sensitivity of the results.

(Links to BC03, BC16, CSS03, DBS19, DSA16, MTD18, MTD22)

2-3. BC03: High Speed Computing and Large Databases. Future command and control systems must have a robust, high speed distributive processing capability to support the commander under conditions where decision time is compressed and vast amounts of information must be filtered, fused, and correlated in near real time to support his critical information requirements. This capability must also emphasize minimization of data transmission requirements and operator workloads, maximization of automated decision aids, automated target recognition, and automated filters for controlling information flow from large databases and high capacity storage means.

(Links to BC02, BC22, DSA08, DBS13, DBS14, DBS16, EEL12, MTD 18, MTD 19, MTD 20, MTD 21)

2-4. BC04: Miniaturization of Hardware. Command and control systems must be capable of linking all battlefield elements from the individual soldier through the national command authority. Systems must support commanders en route, operating in dismounted battle space, mounted battle space, at sea, at fixed sites, and when airborne. The anticipated requirement for secure, high speed processing, mass storage, and multimode/multiband communications to support Command and Control (C2) functions requires mobile and transportable Command, Control, Computers, and Intelligence (C4I) system capabilities in very small and lightweight, packages.

(Linkage to BC04, BC09, DBS10, DBS20, DBS21, MTD 18, MTD,19,MTD 20, MTD21, MTD22, MTD, 24)

2-5. BC05: User Friendly C4I Systems. Hardware and software for automation and communications systems must be user friendly. Operator training requirements must be minimized. Applications should be menu, icon, or voice driven with high speed processing capability. Voice driven software must support a natural language interface with systems. The use of multiple-layer menus should be avoided. Automation tools should also minimize "man-in-the-loop" requirements and allow commanders to focus on critical war fighting tasks.

(Links to BC06, BC09, BC11, BC12, BC14, MTD18, MTD 19)

2-6. BC06: Seamless, Secure, Global Information Architecture. The seamless, secure, global information architecture, which is required by all battlefield functional areas, must support integrated combat operations with the focus being on the mobile war fighting commander. The information architecture must:

a. Provide horizontal and vertical integration of voice, data, graphics, imagery, and video information.

b. Facilitate operations planning, information collection, and information dissemination.

c. Enhance the commander's ability to acquire information from sensor systems, battlefield functional area systems and from subordinate, adjacent, and higher organizations.

d. Support both analog and digital capabilities.

e. Integrate commercial and tactical communications network.

f. Provide a capability to transfer information within the architecture without requiring specific knowledge of the mechanism or platform characteristics that make up communications and automation hardware. Implied are requirements for streamlined communications procedures and for global connectivity of extended-range communications assets, as well as integrated communications between the various interagency, joint, combined, and coalition forces including national command authority, operations (command and control), intelligence, logistics, administrative functions, and the numerous potential echelons of a Force Projection Task Force. Ideally, the adaptive nature of the information architecture should reduce or eliminate degradation factors caused by weather, terrain, distances, obstacles, Electromagnetic Pulse, or jamming between sender and receiver or from supporting communications nodes.

(Links to BC02, BC04, BC05, BC07, BC08, BC09, BC10, BC12, BC17, BC19, BC20, BC21, BC18, CSS03, CSS04, DBS15, DBS20, DCB21, DSA08, DSA15, DSA19, DSA20, EEL11, EEL16, MTD18, MTD19, MTD20, MTD22, MTD24)

2-7. BC07: Interoperability. Forces require total, uninterrupted, interoperable communications between interagency, joint, and combined forces and throughout the length and breadth of the battlefield from the National Command Authority to, at times, platoon level. A robust, adaptive, real time C4I network management capability is required to automatically route/re-route communications and automation information. Systems must use standard formats and protocols, including encryption and decryption, when communicating with any system external to the platform. This includes communications and intelligence systems, logistics systems, automation, message and report formats, data element standards, and compression algorithms for video, maps and imagery. Where necessary, devices must be incorporated that will provide automated linkages.

(Links to BC06, BC10, DBS17, DBS18, DBS20, DSA15, EEL16, MTD18, MTD19, MTD22)

2-8. BC08: Real Time Network Management. Communications and automation capabilities are increasing and there is a corresponding increase in the complexity of network and C4I management. A robust, adaptive, real time C4I network management capability is required to insure interoperability between C4I systems.

(Links to BC06, EEL11)

2-9. BC09: Operations On The Move. Commanders enroute to the theater or moving across the fluid battlefield must be able to continuously plan, communicate intent, issue orders, and monitor and coordinate operations. This will be accomplished using an adaptive warfighter information network with flexible ranges that provides the capability to interoperate with superior, adjacent, and subordinate commanders. Systems should be user-friendly, easily transportable, modularly designed and facilitate rapid movement and emplacement. While enroute, on the move or at the halt, C2 systems must provide: continuous, unimpeded, efficient, and secure voice, data, graphics, imagery, and video capability on the information network; information fusion; vertical and horizontal integration of battlefield information; battlefield information displays to eliminate the need to reference various wall charts or operations documents and the capability to perform split based operations. Information should be updated automatically as a function of data input regardless of input source. The need for

commanders to operate on the move requires storage media that can withstand the vibrations and shocks encountered by combat vehicles, operating on the ground, at sea, and in the air.

(Links to BC06, BC13, BC04, BC05, BC11, BC10, BC12, BC15, BC17, BC18, BC19, BC20, BC21, MTD20, MTD21)

2-10. BC10: Communicate Tactical Information. Tactical information must be communicated between commanders, staffs, and weapon platforms. The commander must be able to access time sensitive operational and intelligence information in order to influence the battle.

(Links to BC06, BC13, BC02, BC09, BC17, BC19, BC20, BC21, BC18, DBS17, DSA08, MTD 19, MTD 20, MTD 21, MTD22, MTD 24)

2-11. BC11: Natural Man Machine Interfaces. The need for commanders to operate on the move in a tactical environment will require the capability for voice, eye, and/or touch recognition, voice synthesis, automatic language translation, and interactive voice commands. These capabilities will facilitate operations planning by minimizing computer operator interface requirements and enhancing time-critical task accomplishment. For example, the capability to use voice commands as opposed to keyboard entry will greatly facilitate operations planning by reducing systems training requirements, minimizing systems reference materials, and decreasing task execution times as well as greatly facilitating communications on the move. Voice input to and output from the staff of commander's terminal should allow the operator to call or send information in a "hands free" environment.
(Links to BC09, BC05, BC12)

2-12. BC12: Voice Control of Automation and Radio Operations. A voice recognition and synthesis capability is needed to control automation and radio devices. This control should facilitate system setup (e.g., frequency settings on a radio), initialization, data manipulation functions, and transmission of messages while on the move.
(Links to BC06, BC09, BC05, BC11)

2-13. BC13: Relevant Common Picture. Situational awareness included under Relevant Common Picture. The relevant common picture assists the commander to operate within the enemy's decision cycle by allowing him to synchronize forces and dictate the operational tempo. It is comprised of

timely, accurate, and relevant friendly and enemy situation information (situational awareness) laid over a common map background with status information. Real-time situational awareness across the battlefield will provide the commander with an intuitive picture of the friendly and enemy situation and reduce battlefield uncertainty by displaying friendly and known enemy force location and status. Weather and terrain products and situational updates in textual and graphic formats should be integrated. Position, situation, and status information must reside on, or be available from, common databases. It must be tailorable to appropriate levels of command, based on variable user determined parameters, and must be sent to multiple locations, both horizontally and vertically. The information should be presented in a concise manner which facilitates quick understanding of situations, yet be sufficiently flexible to support in-depth analyses. Additionally, decision aids should be available to facilitate in-depth analyses and support "wargaming" potential scenarios. Collection of text, graphics, and video information and subsequent development of a common database should provide commanders and staff with a "relevant common picture" of combat, combat service, and combat service support information. C2 systems must interoperate with joint, interagency, and combined members of the power-projection force.
(Links to BC05, BC15, CSS03, DBS10, DBS17, DBS18, MTD18, MTD22, MTD24)

2-14. BC14: Data Presentation. The manner in which data (i.e. terrain, operational graphics, and status information) is displayed should support the intuitive commander and the decision making process by aggregating numerous pieces of information in standardized visual displays and locations. Three dimensional representation of information (i.e., terrain, airspace management, or weapons engagement envelopes) should be realistically portrayed. Decision oriented graphics symbology, should be displayed clearly on a screen and the operator should not have to change the graphics interactively.

All information displayed must be obtained and displayed accurately, even while on the move.
(Links to BC05, BC15, DBS17, MTD22)

2-15. BC15: Interactive Devices. Large screen devices should be suitable for operation in static and mobile CPs and should accommodate the interaction of more than three personnel keeping in mind the

space limitations of some Command Posts (CPs) Additionally, the information should be provided on a large screen displays in a manner similar to the way daily staff updates are currently provided to higher echelon commands.
(Links to BC09, BC13, BC14)

2-16. BC16: Battle Command Training Support. Key to the success of 21st century commanders and staffs is their ability to master the power of information technologies. Additionally, commanders will have amounts of information in a timely and effective manner to effect the operations tempo and operate within the enemy's decision making cycle. Extensive study is needed regarding complex decision making under varying conditions, when and where to employ decision support technologies, and the kinds of training that leads to effective battle command on the information rich 21st century battlefield. Training technologies are needed that train individual commander's problem solving, decision making, and metacognitive skills as applied to a variety of mission scenarios. This is to be done in an environment where the commander is on the move, but in contact with a distributed staff, and that forces horizontal and vertical information linkages. Training equipment and programs must be developed to train the critical skills, knowledge, and tasks required to operate and employ the material systems which are proposed. This includes training technologies that replicate the material technology and combat conditions. Training resources must be developed concurrently with the materiel systems to avoid a lag in combat readiness of the force. Training will have to be effected throughout the enlisted and officer corps, across all functional areas, at all educational levels, and be accessible when and where needed.
(Links to BC02, DSB26)

2.17. BC17: Survivable. C4I systems must survive to operate under all weather conditions and across all levels of operation. Climatic conditions must not cause systems and sensors to fail and become ineffective. Systems at all echelons must be protected against the Nuclear, Biological, Chemical (NBC) attacks, and jamming threat, varying degrees of which exist in most third world arsenals. Systems should also provide redundant, automatic capability to acquire and process information even in the event of destruction of a primary processing facility, loss of an individual system, or in the event of isolated data loss at a particular node of a C2 system.

Additionally, systems should have computer virus detection, protection, and source identification.
(Links to BC06, BC09, BC10)

2-18. BC18: Encryption. Encryption capabilities should increase denial thresholds of current systems to the potential for enemy detection. Capabilities should facilitate automatic operations and minimize man-in-loop requirements. Capabilities should be embedded, but must be seamless when accessed in joint and combined operations.
(Links to BC06, BC09, BC10, BC19)

2-19. BC19: Signature Control for Low Probability of Intercept/Detection. Signals should be made invisible with transmission masking and the origins of friendly signal sources hidden or disguised so that actual locations are not revealed to the enemy. Automatic controls should be embedded in C4I systems in order to disguise the signature produced and make it look as if there were not a C4I system operating. The controlling effect should be flexible enough to produce varying signatures in order to avoid pattern detection. Systems must maintain their communications integrity, avoid detection, and have a low probability of intercept.
(Links to BC06, BC07, BC09, BC10, BC18, BC20, BC21, BC22)

2-20. BC20: Information Throughput. Large volumes of information including voice and video data, must be sent rapidly to avoid detection and exploitation. Systems and technologies that can carry necessary quantities of data should be developed to speed up the transmission process.
(Links to BC06, BC09, BC10, BC19, BC21)

2-21. BC21: Signal Time Reduction. Transmission of signals must be reduced to the least amount of time possible (e.g., improved data compression and the increased use of packet switching).
(Links to BC06, BC09, BC03, BC10, BC19, BC20)

2-22. BC22: Expendable Decoys. Expendable decoys should simulate the sight, sound, thermal image, and electronic signature of a command post yet be sufficiently realistic to deceive enemy sensors. (No linkage to other Battle Command OCRs identified)

Chapter 3

Combat Service Support (CSS)

Operational Capability Requirements

3-1. CSS01: Preventive Medicine. The preventive medicine system must improve soldier sustainability through prevention of endemic disease or injury from environmental, occupational, and biological or chemical warfare agent hazards. The preventive medicine system must be modular in design to provide a comprehensive support package adaptable to a full continuum of operations. It must conduct FLOT to CONUS base disease surveillance using state-of-the-art automation and communication systems to produce a real-time, tactically significant disease profile. Preventive medicine must be capable of providing versatile, mobile, and enhanced disease vector control support to reduce vector-borne diseases in a theater of operations. They must possess the ability to provide rapid and comprehensive environmental monitoring to assess acute and chronic health risks encountered during military operations. (Applicable to all Battle Labs)

3-2. CSS02: Logistics Command, Control, Communication, and Automation (C3A). Logistics C3A is required for effective command and control of logistics operations supporting force projection. Logistics C3A includes application of technology to support CONUS based management of theater logistics operations. Logistics C3A must accommodate the linking of communications and automation technologies to provide total CSS situational awareness. CSS units need interactive decision aid systems along with seamless, high data rate, assured [and] communication links. These will ensure seamless interface between the strategic, operational, and tactical areas of operation. Logistics C3A includes the use of automatic identification technology (AIT) for source data automation of supplies, personnel (friendly; enemy prisoners of war), and equipment. Due to the large amounts of information which could overwhelm the soldier, Personal Digital Assistants (PDAs) are required to assist soldiers in organizing and displaying key information. PDAs will also act as a primary input interface between the soldier and the logistics C3A systems. (Applicable to CSS BL)

3-3. CSS03: Assured Communications for CSS Units Total Distribution. CSS units require seamless, global, wireless, high data communication

links. The most critical need is to enhance the communications for CSS units in the tactical area.

3-4. CSS04: Medical Command, Control, Communications, Computers and Intelligence (C4I). A requirement exists to provide a seamless state-of-the-art system of Combat Health Support (CHS) C4I across the operational continuum supporting both joint and combined forces. C4I must be able to conduct split based operations on a continuous operational basis and be strategically deployable. Appropriate CHS staff representation must be available at all Army command levels. C4I must provide for and manage horizontal technology insertion into all organizational designs to include Advanced Medical Diagnostic Communications for Combat Casualty Care (AMDC4). (Applicable to all BLs)

3-5. CSS05: Logistics Mobility. Mobility enhancements are required to address the strategic, operational, and tactical implications of CONUS-based Force Projection Army. This involves prepositioning of materiel and supplies in or near critical regions, domestic policy, unit stationing, infrastructure to support mobilization and rapid deployment, movement of equipment and supplies through ports of debarkation, highly mobile resupply, improved airdrop capabilities, and other modifications to better support highly mobile offensive operations (to include enemy prisoner of war evacuation). This includes use of lightweight materials, robotic materiel handling equipment (MHE), and high mobility MHE. Also require day/night all weather capability for the tactical wheeled vehicle (TWV) fleet to allow support vehicles to keep pace with supported combat vehicles. (Applicable to all BLs)

3-6. CSS06: In-Transit/Total Asset Visibility Total Distribution. Total distribution requires in-transit visibility and total asset visibility of all classes of supply, unit equipment, units, and movement platforms. CSS units need the ability to seamlessly incorporate Automatic Identification Technology (AIT) (e.g. active and/or passive tagging systems, microelectronic devices, radio frequency (RF) wireless tags, bar codes, etc.) with read/write capability into the distribution system and have the ability to fix location of items moving through the system on a real-time or near real-time basis. (Applicable to CSS BL)

3-7. CSS07: Distribution Management Total Distribution. Improvements are needed to track customer and supply location and delivery points. (Applicable to CSS BL)

3-8. CSS08: Containerization and Packaging Total Distribution. Improvements are needed in the technology aspects encompass[ed]ing configuration of loads in CONUS, MHE that is positioned to handle containers, and packaging that is recoverable, recyclable and capable of being decontaminated. (Applicable to CSS BL)

3-9. CSS9: Operations Other Than War (OOTW) versus Warfighting Operations - Total Distribution. There is a need to incorporate technologies which will permit CSS units to operate in peacetime closer to the way they will in wartime. (Applicable to CSS BL)

3-10. CSS10: Far-forward Surgical Support. The requirement to project surgery forward increases as a result of the extended battlefield. Highly mobile forward surgical teams (FSTs) are required to perform urgent resuscitative surgery for casualties who require surgical stabilization prior to further evacuation. Forward surgical teams require improved shelter systems that allow strategic deployability and quick set-up, rapid-response surgical capability under environmentally controlled conditions. The FST require future technology insertion to include AMDC4. (Applicable to all BLs)

3-11. CSS11: Patient Evacuation. The AMEDD must be able to provide a "seamless" system of medical evacuation throughout the operational spectrum to include the evolving missions of OOTW, combat search and rescue, and shore to ship. Ground and air evacuation platforms must have the capabilities to provide continuous MEDEVAC support in all environmental conditions suitable for combat operations. Ground and air evacuation platforms must be able to communicate with supported and supporting units, as well as the medical infrastructure. They must also possess the ability to maintain situational awareness on the future, digitized battlefield. Medical evacuation organizations must be modular in design to allow for functionally emulative increments, allowing for split-based operations. Medical evacuation units must also provide state-of-the-art medical care compatible with the medical structure on the

battlefield, and additionally, provide aviation medicine support to attached units. Ground and air evacuation platforms require increased patient transport capacity and enhanced en-route monitoring and treatment capability through integration of AMDC4. (Applicable to all BLs)

3-12. CSS12: Treatment of battlefield wounds, injuries, and disease. Rapid casualty location and acquisition plus early effective resuscitation and surgical management will reduce the killed in action and died of wounds rates. Improved methods of physiological resuscitation are required. Improved diagnostic and treatment capabilities at the unit and area level treatment facilities will reduce lost duty time for minor illnesses/ infectious diseases. Treatment facilities must be capable of operating effectively in an NBC environment and improved rapid patient decontamination capability is required. Unit and area combat health support is required for all operations to include OOTW. (Applicable to all BLs)

3-13. CSS13: Combat Health Logistics System and Blood Management (CHLS). The CHLS must be modular in design to provide flexibility, mobility, and capability to support continuous operations and support each increment of deployment forces. The system must be anticipatory and project its support through split-based operations for Army only, combined, and joint scenarios. Division support requires receiving, storing, processing, disposing, and distributing medical materiel, unit medical maintenance, throughput of blood products and single vision optical fabrication and repair. Corps and Echelons Above Corps (EAC) support requires: receiving, storing, processing, contracting, disposing, and distributing medical materiel; single and multivision optical fabrication and repair; medical maintenance; blood distribution; and limited capability to collect blood; medical gas production and distribution; and building of medical assemblages/push packages. The CHLS must have the ability to centrally manage critical Class VIII items and coordinate with non-medical logistics organizations for all medical logistics activities within an Area of Operation (AO). It must have the ability to support reception operations at ports of debarkation. The CHLS must employ state-of-the-art standard medical logistics information management and communication systems to facilitate: total asset and in-transit visibility, automated transmission of optical fabrication requests, the management of

blood and blood products, the management of medical equipment readiness, and the management of captured enemy medical materiel and equipment. (Applicable to CSS BL)

3-14. CSS14: Advanced Medical Diagnostic Communications for Combat Casualty Care (AMDC4). Health care personnel at all echelons of care must be able to communicate with each other by audio, video, and electronic media, so maximum utilization of expert consultant skills, diagnostic capability, and treatment regimens can be quickly implemented to provide state-of-the-art resuscitation (as limited by the battlefield environment), care, and evacuation. Integration of existing and emerging electronic communication technologies into the patient care system, beginning with the individual soldier and continuing throughout the health care continuum, will allow the AMEDD to project expert preventive medicine and treatment necessary to improve the sustainability of the future force. In addition, health care in operations other than war will be enhanced by the utilization of these technological innovations. (Applicable to all BLs)

3-15. CSS15: Provision of Combat Health Support (CHS) in a NBC Environment. CHS in a NBC environment must have the ability to triage, diagnose, and treat casualties while in protective equipment/shelters. Decontamination of patients require less labor intensive, procedures and must not aggravate present injuries. Medical equipment and supplies must be protected from biological and chemical effects or decontaminable. (Applicable to all BLs)

3-16. CSS16: Directed Energy (DE) Injuries. A requirement exists to identify the types of laser-induced eye injuries that will need medical treatment. The impact of, and recommended strategies to minimize the performance degradation to ocular laser exposure and devices designed to protect against laser effects on the eyes are needed. The psychological and performance effects of a wide range of DE exposures, including high-power and ultra-wide band microwave hazards, need to be determined. (Applicable to all BLs)

3-17. CSS17: Dental. Dental operations require the full spectrum of oral health care across the operational continuum, to include OOTW. Dental units need the ability to augment Medical Treatment Facilities by providing both dental personnel and

equipment, particularly during mass casualty operations. The dental care system must be modular in design and have the ability to provide care from the Theater of Operations to the CONUS base. Dental units require the capability for operational command and control, task organization, strategic deployability, tactical mobility, and split-based operations. Dental units require state-of-the-art information management and communications systems. (Applicable to CSS BL)

3-18. CSS18: Combat Stress Control. Combat stress control requires far-forward prevention and intervention for combat stress over the continuum of operations. Prevention of stress induced error, disability and misconduct during and after war and OOTW requires ongoing command consultation, company-level stress monitoring and unit debriefings, and immediate, far-forward intervention and treatment for stress cases. Combat stress control (CSC) teams organic to divisions/brigades and corps-level area medical support, plus modular CSC reinforcing teams, require tactical mobility, telecommunications, and advanced biofeedback capability. Effective CSC requires conducting Army stress control activities with supported units routinely in realistic training and in garrison, including assistance to unit family support groups. (Applicable to all BLs)

3-19. CSS19: Veterinary. Comprehensive veterinary medical and surgical programs are required to maintain the health of government animals. Training of animal handlers, assessment, prevention and control of militarily significant animal disease (zoonotic) threats are necessary for a thorough veterinary preventive medicine program. The treatment of government animals for biological and chemical injuries requires comprehensive monitoring and diagnosis. Veterinary inspections are required in the following areas: subsistence at point of origin, DoD operational rations, commercial food, water and ice establishments, and surveillance of biological and chemical agent contaminated subsistence. (Applicable to all BLs)

3-20. CSS20: Battlefield Hospitalization (Hosp). Hospital care to all classes of patients across the operational continuum, including unique medical aspects of OOTW is required. Inpatient medical and surgical services, and outpatient clinic and consultant services on an area support basis are

required. These services must allow for task organization to support rapid incremental deployment and split-based operations. Paperless transmission of medical records and other information, both externally and internally throughout the hospital is essential. The requirement exists for state-of-the-art health care systems and advanced medical diagnostic communications for combat casualty care which seamlessly interface with all echelons of health care, including fixed medical treatment facilities in CONUS. The hospital system must be capable of operating in a biologically and chemically contaminated environment. (Applicable to CSS and EEL BLs)

3-21. CSS21: Medical Laboratory Support. Medical laboratory capabilities must be modular in design and retain the adaptability and flexibility to support each phase of military operations and must constitute a seamless continuum of functional capabilities in split-based operations, OOTW, and rapid force projection. Division and forward surgical support requires laboratory capabilities to provide limited, but appropriate, analytical procedures and blood products in support of disease diagnosis, patient monitoring, and surgical resuscitation. At Corps and EAC, laboratory support must provide appropriate capabilities to prevent or minimize the effects of endemic disease (to include sexually transmitted diseases), hemorrhage, injury, and the medical effects of weapons systems. The Area Medical Laboratory (AML) is an independent laboratory asset that provides the capability to identify and evaluate health hazards in the AO through the use of unique medical laboratory analysis and rapid assessments of endemic disease, environmental and occupational health threats, and NBC warfare agents. The AML's analytical, investigative, and consultative capabilities must provide responsive medical assessment and field confirmation of conventional and unconventional medical threats, highly infectious agents, and other hazardous substances. The medical laboratory support system must exploit state-of-the-art science and technology and must provide a tailored package of analytical capabilities in a multidisciplinary array of chemistry, hematology, microbiology, epidemiology, nuclear physics, anatomical pathology, transfusion medicine, and professional consultation to sustain the health of the population at risk. (Applicable to all BLs)

3-22. CSS22: Field Services. Requirements exist for [Includes] enhanced procedures and equipment to improve water purification (including black and gray water), storage and distribution support capabilities to the individual soldier and detection of chemical and biological warfare agents in indigenous water sources. Also require improvement of CSS capabilities in the following areas: ration support (availability of hot, nutritious, performance enhancing meals), tents and shelters, tentage heating equipment, laundry and bath operations, clothing and individual equipment, textile repair and renovation, equipment and personnel decontamination, and human waste disposal. Improvements in quality of life for the individual soldier in austere field conditions for extended periods is needed. The focus of this effort is to provide responsive, flexible support to soldiers during any environmental or tactical situation. (Applicable to all BLs)

3-23. CSS23: Personnel Support. [Includes items for use by] Individual soldiers need items such as Personal Digital Assistants (PDAs) with requisite software and communications capabilities to link to logistics information systems/data bases. (Applicable to all BLs)

3-24. CSS24: Finance and Accounting Support. There is a requirement for a Defense Finance Battlefield System (DFBS) to provide standard, integrated, finance and accounting support in the field equivalent to the support provided in garrison. The capabilities of DFBS will service all military services, civilians, and contractor personnel supporting DoD on the battlefield and include: Military/Civilian Pay, Commercial Accounts/Vendor Services, Travel, Accounting, Disbursing, Host Nation/Coalition Support, Imprest Funds, and Enemy Prisoner of War Payment Information System. (Applicable to all BLs)

3-25. CSS25: System Sustainment. Improvements are needed to better sustain Army, Joint, and Coalition weapon systems without the luxury of a well developed mature theater. Tactical CSS units need capability to keep pace with maneuver units and provide CSS during movement. Requirements exist for a forward area container handling system, properly equipping our maintainers for providing fix forward capability, and enhanced diagnostics and prognostics that will predict maintenance requirements and automatically feed information to

the centralized maintenance managers and automated systems. Improvements are needed in fuels, lubricants, and associated products that will enhance the performance of mechanical systems. Also need improvements in petroleum quality analysis, fuel distribution, and rapid refuel capability. Power sources need to be lighter, smaller, all temperature, longer lasting, and more energetic for communications/electronics equipment, all vehicles, air, and water craft. Power sources include but are not limited to batteries (primary, rechargeable, reserve, thermal, solar, or any new concepts), capacitors, state of charge indicators or similar purpose technologies, and stand alone power sources such as fuel cells, generators, or photovoltaics. A universal battery charger is also needed. (Applicable to all BLs)

3-26. CSS26: Logistics Force Design. Force structure changes are necessary to support force projection. Force design changes may be the result of modifications to other operational capabilities or structure changes established in their own right. An example of the latter is establishing modularly structured CSS units to support deployments of any ultimate end strength throughout the theater maturation. (Applicable to all BLs)

3-27. CSS27: Employment of Non-Military. There is a need for the employment of Non-Military in military operations. Civilians will have a greater role in functions that become "CONUS-bound" as well as being deployed to provide critical in-theater capabilities which may not be regionally available to sustain operations. Examples include contracted aviation maintenance and AMC's Theater Support Group. (Applicable to CSS)

3-28. CSS28: Interactive Logistics Planning and Management. There is a requirement for [includes] identification and development of interactive decision aid systems to enhance strategic, operational, and tactical logistics operations. These simulations should have the dual capability of being an effective training tool during normal unit training, large scale training exercises, and logistics interfaces into Louisiana Maneuvers. (Applicable to CSS BL)

3-29. CSS29: Patient Model for Echelons Below Corps. The requirement exists which would enable the Army Medical Department to continuously perform detailed patient condition analysis from

Division through Corps. The requirement exists for a Division level data base that will also effect evacuation and entry level corps hospital functional modeling. (Applicable to all BLs)

Chapter 4

Depth and Simultaneous Attack Battle Lab Operational Capability Requirements

4.1 DSA01: Extend Ranges of deep attack systems. Future systems must provide for extended ranges allowing the attack of targets at great depth, in order to adequately defeat future missile threats and to conduct precision strikes against critical targets developed at the Corps and EAC.

4.2 DSA02: Extend Ranges of Theater Missile Defense systems. Tactical Ballistic Missile Counterfire systems, and Forward Area Air Defense systems, including aviation, air defense, field artillery, and Special Operations Forces systems to achieve effective Theater Missile Defense.

4-3. DSA03: Smart and Brilliant Munitions for Deep Attack. Current arsenal of attack munitions are predominantly "dumb" munitions and have limited sub-munition options. Future deep attack munitions must include greater reliance upon smart and brilliant munitions and sub-munitions. Munitions and submunitions must have a greater range of application for flexibility of operations against a wide range of target types/profiles. Significantly improved or elimination of munition/sub-munition dud rates to eliminate unexploded ordnance hazards.

4-4. DSA04: Theater Missile Two-Tiered Defense. Current air defense systems must have enhanced capabilities to conduct a two-tiered Theater Missile Defense.

4-5. DSA05: Enhanced Survivability of Deep Attack Systems. Currently, the majority of systems supporting deep operations have limited survivability capabilities. Improvements are required for detection avoidance and/or increased armaments protection, to include warning and alerting the force simultaneously within Active Defense architecture before the Tactical Ballistic Missile (TBM) impacts

and to discriminate between Weapons of Mass Destruction (WMD) and conventional warheads.

4-6. DSA06: Fratricide Avoidance. There is limited protection against fratricide. Future requirements include increased protection against friendly fire engagements with on-board friend or foe identification means and enhanced battlefield tracking systems. (Links to MTD 15)

4-7. DSA07: Real-Time, On-Board, All-Weather Precision Terrain Location. Current mapping capabilities are limited. Future systems must include digitized mapping linked to satellite operations providing up to date location capabilities. Single source of all mapping/terrain data and coordinates is required.

4-8. DSA08: Robust, Streamlined, Multi-Node Processing. Sensor data gathered at Corps and EAC must pass through a number of communications nodes before targeting data is available to shooters. A robust streamlined processing system is required to facilitate rapid decision making, thus improving shooter responsiveness. A seamless architecture allowing real time data to reach aviation, air defense, and field artillery shooters is required to support Joint Precision Strike and Theater Missile Defense operations.

4-9. DSA09: Real-Time Location and Identification of Targets. Current sensor capabilities that attempt to classify and locate targets are inadequate. Deep attack systems must have real time sensor data that provides sufficient detail in location and identification of targets, reducing time lines by eliminating man-in-the-loop analysis and improving overall responsiveness in Joint Precision Strike and Theater Missile Defense.

4-10. DSA10: Real-Time Seamless National Targeting Dissemination. Limited connectivity and data base management exists among national sources, Corps, and EAC. Future capabilities must provide real time collection of targeting data from national sources tied directly to Corps and EAC intelligence collection centers with the capability of linking specified shooter elements into a seamless national targeting dissemination system. This will facilitate the improved attack capability for critical targets to include missile logistical sites, infrastructure, and other key targets such as command and control, follow on forces, and targets

normally associated with precision strike requirements.

4-11. DSA11: Long Dwell Surveillance At Corps and EAC. Currently the numbers and types of tactical sensors available to the Corps and EAC are limited and have constrained dwell-time capabilities to search required areas of interest. Future capabilities include an increase in dedicated target acquisition systems for Corps and EAC.

4-12. DSA12: Day/Night All Weather, All Terrain Sensors. Currently, acquisition systems are weather and terrain dependent. Sensors must have a day/night, all weather, all terrain capability that provides accurate location and identification of targets, to include capability to discriminate between WMD and conventional warheads throughout the depth of the battlefield. (Links to MTD24)

4-13. DSA13: Accurate, Real-Time BDA. Limited Battle Damage Assessment is available to commanders. Future sensors must have the ability to provide accurate real time BDA throughout the depth of the battlefield.

4-14. DSA14: Rapid Location and Identification of Passive Targets. Passive targets are generally not detectable with today's technology. Future capabilities and attack systems must include the ability for sensors to locate and identify passive targets as soon as possible allowing for early defeat of theater missile, logistical forces, chemical and biological facilities, as well as other critical targets generally associated with tactical and operational centers of gravity.

4-15. DSA15: Automated Interoperable Communications. Current communications and automation interoperability is limited. Future capabilities must include the ability for EAC and Corps to have total, uninterrupted communications and automated linkage throughout the depth of the battlefield. Additionally, there is a need for easy access to functional area data without time consuming sorting on the part of the users. Improving interoperability will greatly assist in defeating critical targets.

4-16. DSA16: Artificial Intelligence (AI) Decision Aids Future capabilities must include an automated artificial intelligence network that

streamlines coordination and planning steps in support of deep attack operations.

4-17. DSA17: Information Fusion Technology Supporting Precision Strike. Fusion of intelligence information and deep attack coordination and planning is fragmented and characterized by extended man-in-the-loop operations. Deep operations coordination cells are required to support Corps and EAC in planning, coordination, and execution of deep attack operations to include precision strike, theater missile defense, and the synchronization of associated air defense and aviation operations.

4-18. DSA18: Near Real-Time Deconfliction of Airspace and Targeting Data. Deconfliction of airspace coordination is too slow and cumbersome. Effective coordination requires capabilities for near real-time deconfliction of targeting data and airspace usage, possibly directly linked to shooters and aircraft, allowing for a streamlined, decentralized capability that would reduce overall coordination time.

4-19. DSA19: Communications Interoperability Between Joint and Coalition Forces. Currently there is limited communications interoperability between joint and coalition forces. Future capabilities must include devices that provide automatic interfacing among joint and major coalition forces in support of deep attack operations.

4-20. DSA20: Terrain Independent Communications and Information Distribution. Currently, there is inadequate communications from corps to subordinate units. Future capabilities must reduce the time required for installation and networking of communications systems and reduce terrain dependency. (Links to MTD 18, MTD 19, MTD 20)

4-21. DSA21: Rapidly Deployable Attack Systems. Current surface to air and surface to surface attack systems have limited strategic and theater deployability. Future capabilities must include attack systems that can be easily and rapidly deployed.

4-22. DSA22: Enhanced Mobility for TMD and Precision Strike Attack Systems. Current surface to air and surface to surface attack, C2, and support systems have limited tactical mobility. Future

capabilities must include systems with tactical mobility comparable to the supported force.

Chapter 5

Dismounted Battle Space

Operational Capability Requirements

Lethal Capabilities: Designated with an "A" suffix. In order to meet the force projection requirements of the National Military Strategy the Army must have the capability of overmatching lethality throughout the battlefield. Combat systems must have greater effective ranges, increased probabilities of kill, and decreased susceptibility to enemy acquisition, countermeasures, and natural obscurants

Non-lethal Capabilities: Designated with a "B" suffix. The Army has an increased requirement to respond to international crises that develop in the operations other than war environment. U.S. military forces will be required to apply force that is non-lethal to combatants and non-combatants, and, in selected cases, force that is non-destructive to materials or the environment.

5-1. DBS01A: Dismounted Soldier Engagement of Moving and Stationary Targets. Enhance ability of dismounted soldier to engage moving and stationary with both direct and indirect fire. Provide overmatching lethality against current and future systems of potential adversaries.

5-2. a. DBS02A: Increased lethality of dismounted soldier weaponry. To defeat personnel, thin-skinned vehicles, bunkers, armor, fixed and rotary wing aircraft, and indirect fire weapon systems. Application of enhanced ammunition, leap ahead ballistics technology, directed energy technology, and advanced fire control for dismounted soldier direct fire and indirect fire systems.

b. DBS02B: Dismounted Non-Lethal Means. Direct and indirect dismounted soldier capabilities for defeating personnel and vehicles without causing permanent injuries or incapacitation to personnel and mission kills or non-catastrophic defeat of material systems.

5-3. DBS03: Increased dismounted soldier target acquisition capabilities. Require increased capabilities including information awareness and intelligence awareness.

5-4. DBS04A: Smart and intelligent mines.

Tactically transportable by dismounted soldiers which provide a wide area stand-off capability, autonomous operations, and function as a sensor for other lethality and intelligence systems.

5-5. DBS05A: Enhanced Dismounted Soldier Indirect Fires. Require improved munitions, enhanced fire control, and precision guided munitions.

5-6. DBS06: Passive Capabilities. Dismounted soldiers require passive capabilities for protection against ballistic, directed energy, and electromagnetic effects, extreme environmental conditions, and non-battle injuries. (Links to CSS01)

5-7. DBS07: Active Capabilities. Dismounted soldiers require active capabilities to enhance survivability including timely intelligence, extended target acquisition and engagement ranges, combat identification, and low observables, combat life saving, battle injury treatment and prevention, non-battle casualty prevention, and veterinary services. (Links to CSS01)

5-8. DBS08: Dismounted Forces Acquisition Countermeasures. Dismounted forces which reduce or eliminate hostile forces capabilities to detect, locate, range, and engage dismounted soldier with lethal effects are required to enhance dismounted soldiers' survivability. New, lighter weight, stronger materials are required to replace heavier armor.

5-9. DBS09: Signature Reduction. Signature reduction technologies for application to dismounted soldiers are required to reduce soldiers' signature in the visual, thermal, acoustic, and radar bandwidths. Low observable technologies, advanced conventional and multi-spectral camouflage is required to counter enemy acquisition capabilities.

5-10. DBS10: Indicators and Warnings For Dismounted Soldiers: Forces operating in dismounted battle space require the capability to access the full spectrum of intelligence information. This includes the capability to collect, analyze, produce, and disseminate timely intelligence data. Required intelligence data includes indicators and warnings, situational awareness (enemy and friendly), system targeting, and targeting development.

5-11. DBS11: Drop Zone and Landing Zone Intelligence. Capability required to generate and provide the dismounted forces with information on Drops Zones (DZ) and Landing Zones (LZ).

5-12. DBS12: Post Strike Assessments/Battle Damage Assessments. Forces require significantly enhanced capabilities for Post Strike and Battle Damage assessments. Ability required to generate and quickly disseminate assessments to forces actively engaging the target as well as command posts and fire direction centers engaging the target set.

5-13. DBS13: Integrated Target Acquisition: Capabilities are required which provide vertical and horizontal, near real time, target acquisition information throughout the task force. This capability is key to massing effects of fires without massing friendly forces. (Links to MTD 03)

5-14. DBS14: Extended Range of Target Acquisition: Extended range, all spectrum target acquisition will enhance the capabilities of individual soldiers, weapons platforms, and indirect fire systems. Target acquisition systems must provide the capability to have near real time sensor to shooter linkages which incorporate both brigade and below systems and echelon above brigade systems, including systems of other services, national level systems, and those of coalition forces.

5-15. DBS15: Sensor to Shooter Linkages: The task force commander must have the ability to plan and control the sensor to shooter linkages to effectively extend his battle space.

5-16. DBS16: Improved Weapons Pointing and Control: Capabilities required for day/night, all weather target location, tracking (including auto tracking), combat identification, weapons pointing and shooting, acquisition and full solution fire control to enhance weapons' effect on targets.

5-17. DBS17: Increased Control of Battle Tempo: Battle command systems are required to provide horizontal and vertical command and control capability in near real time, enabling dismounted forces to operate at faster tempo than the enemy. The capability to gather, analyze, and disseminate information on both friendly and enemy forces from multiple sources.

5-18. DBS18: Near Real Time Data Fusion: Dismounted forces require near real time data fusion and software commonality.

5-19. DBS19: Automated Planning and Rehearsal. Dismounted forces require the capability to conduct automated planning and rehearsals, split based C4, situational awareness, and logistics support.

5-20. DBS20: Dismounted Digitization: Systems must be digitized and capable of linking all battlefield elements from the individual soldier through the brigade level. They must also provide linkage to systems above brigade including joint, national, and coalition systems. These systems must provide vertical and horizontal information linkages with the capability to process information to prevent information overload.

5-21. DBS21: Dismounted Soldier Communications and Information: Lighter weight, smaller communication and integrated personal computer equipment will be required to reduce soldier and vehicle loads while maintaining secure communications and information flow.

5-22. DBS22: Rapid Breaching of Obstacles by Dismounted Forces. Require capabilities to detect, identify, and breach or bypass natural or manmade obstacles to enhance dismounted forces mobility.

5-23. DBS23: Tactical Dismounted Mobility. Forces operating in the dismounted battle space require the capability for high rapid, agile mobility in close terrain, restrictive terrain, and during airborne, air assault, and waterborne operations.

5-24. DBS24: Mobility Enhancements. Forces operating in the dismounted battle space require increased/enhanced mobility via the reduction of systems and vehicle weights, improved vehicular design, and integrated robotic and climatic control designs, and nutritional/medical enhancements

5-25. DBS25: Reduced Soldier Load. Ground and air robotic platforms required to reduce the load of the soldier, relieving his burden of noncombat essential equipment.

5.26. DBS26: Training and Leader Development. Training and leader development will be key to maintaining combat ready soldiers and units.

Success on the battlefield will require the interrelated and supporting individual, institutional, and unit training pillars adapting to the doctrine, organizational, and materiel systems that are emerging.

Chapter 6

Mounted Battle Space Battle Lab

Operational Capability Requirements

6-1. MTD01: Firepower. Systems must provide over matching lethality against current and future systems of potential adversaries. Lethality must be enhanced through the development of exotic kinetic energy kill mechanism and chemical energy munitions designs. Improved weapons systems such as the Electro-Magnetic (EM) gun and Directed Energy (DE) systems to include lasers, radio frequency, and particle beams must be developed. Leap ahead ballistics technology, directed energy technology and advanced fire control are required. Targets include fixed and rotary wing aircraft.

6-2. MTD02: Moving and Stationary Targets. Must have the capability to engage and kill moving and stationary targets, with direct and indirect fire at extended ranges, with a reduction in manpower intensive tasks. Targets include personnel, bunkers, armor, thin-skinned vehicles, fixed and rotary wing aircraft, and indirect fire systems.

6-3. MTD 03: Target Acquisition. Require increased target acquisition capability to include information awareness and intelligence awareness, leap ahead ballistics technology, directed energy technology, and advanced fire control.

6-4. MTD 04: Mines. Smart and intelligent mines to provide a wide area stand-off capability capable of autonomous operation which can also function as sensors of target acquisition for other lethality and intelligence systems.

6-5. MTD 05: Improved Munitions. Direct and indirect fires will require improved munitions, enhanced fire control and precision guided munitions. Upgrade in 105/120 MM ammunition is required to defeat current and projected air and ground threats.

6-6. MTD 06: Intelligence for Mounted Forces. Mounted forces require the capability to access the full spectrum of intelligence information. This includes the capability to collect, analyze, produce, and disseminate timely intelligence data.

6-7. MTD07: Low Observable. Materiel development, vehicle shaping and treatment of visual, acoustic, infrared and radar signatures must be developed which will reduce the probability of vehicles being acquired and engaged by the threat.

6-8. MTD08: Defilade & Cover Generation. Ability to create defilade/cover of Mounted Forces: require enhanced capabilities to rapidly "dig in" to create defilade and cover for mounted systems.

6-9. MTD09: Mounted Forces Mobility. Survivability of mounted forces increases with increased mobility and agility on the battlefield. Advanced propulsion systems for wheeled, tracked, and air platforms coupled with advanced signature reduction, warning systems, and hit avoidance technologies are required. (Revise and move to Mobility)

6-10. MTD10: Penetration and Kill Avoidance. Increased ballistic protection is required for mounted platforms to prevent penetration or mitigate effects of impacts from direct, indirect, guided and ballistic munitions including kinetic energy and chemical energy penetration mechanisms. Capability is required to survive ballistic impact, thermal effects, and overpressure effects of munitions. A suite of survivability enhancement system capable of detection and prioritization of threats, crew alert, initiation of countermeasures and automatic or semi-automatic execution of protective measures. Jamming of and active intercept of beams, projectiles and munitions are required.

6-11. MTD11: Threat Warning. Mounted forces require improved active and passive security measures. Measures are required to enhance Operational Security (OPSEC), Signals Security (SIGSEC), and Counter-Reconnaissance, Intelligence, Surveillance, and Target Acquisition (C-RISTA) by hostile forces. Enhanced deception capabilities are required for friendly forces. Enhanced capabilities are required for friendly reconnaissance and surveillance permitting earlier, assured acquisition, identification, and location of hostile forces while denying the enemy's knowledge

on the presence of friendly reconnaissance/surveillance capabilities.

6-12. MTD12: NBC Warning to Mounted Forces: Early warning is key to avoiding NBC contamination. Sensors for the individual soldier and systems capable detecting multiple agents and characterizing new agents are required. Improvements are needed in miniaturization, lower detection limits, biological detection and logistical supportability.

6-13. MTD13: Individual Protective Equipment for Mounted Forces. Individual protective equipment must have reduced weight, be wearable for extended periods without degrading individual performance, and must be vision/ergonomically compatible with weapons and vehicle systems. Systems must incorporate laser/ballistic protection. Soldiers and crews require an integrated protective ensemble which has the capability to be tied to a platform's systems for both ground and air platforms.

6-14 MTD14: Prevention of Fratricide. Survivability must be enhanced through the introduction of systems that reduce fratricide and materiel losses. Effectiveness must be enhanced through systems that identify hostile forces at the maximum weapons engagement range. Both must be enhanced through the introduction of near real-time situational awareness information at all levels. Information must be provided in a seamless fashion irrespective of the echelons involved.

6-15. MTD15: Collective NBC Crew Protection. Collective NBC protection is required for Command Posts (Cps), rest and relief facilities, and combat platforms. Improvements are required to increase the effectiveness of collective protection systems while simultaneously reducing the weight, cube, and power requirements for these systems. Collective protection systems should be integrated into other environmental control systems for shelters and platforms for economy of space, weight and power. Improvements required over current collective equipment to reduce manpower requirements for employment of systems and to reduce logistical support requirements.

6-16. MTD16: Smoke. Mounted and dismounted ground forces require improved smoke materials and methods of delivery to maximize our ability to screen our movements, protect against enemy detection, acquisition and hitting of our assets, while minimizing the interference with our ability to see the enemy.

6-17. MTD17: Mounted Communications and Automation. Mounted forces require the creation of reliable, redundant, horizontally integrated command and communication measures. Leaders must have a lean but functional battle command system which must provide in the intelligence data and the prism through which the leaders can shape their vision. New communications systems must be secure, reliable, compatible, reduce planning time, use automated processing and be capable of rapidly disseminating critical information and orders. The morass of C4I systems must be completely synchronized and maximized use must be made of automated artificial intelligence systems. Systems must maximize commonality of mission planning. Communication and automation must be interoperable between joint and coalition forces.

6-18. MTD18: Digitization of the Mounted Force. Horizontal integration of the battlefield must be expanded through the digitization of information. Digitizing the battlefield will allow leaders to gain critical information, analyze, synchronize, integrate, and employ all warfighting systems. It is imperative that software and hardware be created which is flexible enough to respond rapidly to change, as well as meeting the needs of various type users.

6-19. MTD19: Mounted Command and Control on the Move (C2OTM). Mounted forces require robust, long-range, seamless C4I to permit command and control functionality while both the commander and the commanded force are on the move. Must facilitate continuous planning, monitoring of operations, and coordination of operations across the battlefield. Future capabilities must increase usage of high data rate secure, non-line-of-sight, long-range communications that provide continuous connectivity and are nonjammable.

6-20. MTD20: Command Posts. Staffs must have the capability to operate out of a highly survivable, mobile, stealthy command post that functions on the move. Command Posts must be automated and

configured to allow all required staff functions to be performed with reduced staffing.

6-21. MTD21: Mounted Forces Situational Awareness. Require capability to provide for commanders through combat platform crew level with analyzed and timely intelligence. Commanders must be able to collapse and shape information into formats which fighters need to visualize the entire battle space. They must be able to access, update, retrieve, display, and transfer digitized terrain and weather data, man-made obstacles/barriers information and orders in support of automated intelligence preparation of the battlefield to higher, lower, adjacent, and to joint and allied forces. The capability must exist to provide multi-discipline predictive intelligence and warning data to include imagery. Commanders must be able to direct and redirect organic and supporting collection assets which can detect, locate, identify, track, and report threat C2, air defense, C-RISTA, maneuver, fire support, logistics formations, support forces, nuclear and chemical weapons.

6-22. MTD22: Sensors for Mounted Forces. Sensor capabilities must be expanded to include the use of unmanned aerial/ground collection and robotic systems and they cannot be weather dependent. A robust, streamlined sensor data processing is required to facilitate rapid decision making and shooter response. Real time information must be provided.

6-23. MTD23: Terrain and Weather. Capabilities are required which allow commanders to better utilize terrain and weather to their advantage. A desired capability is to be able to receive and transmit weather and terrain products and situation updates in textual and graphic formats. The capability to operate in limited visibility conditions or over weather affected terrain is critical.

6-24. MTD24: Advanced Propulsion. Propulsion systems must be more efficient in power to weight and power to volume ratios, translating into smaller, lighter, and more fuel efficient vehicles. Improved drive technology, such as electric drive, is required to permit vehicle designers the opportunity to radical alterations in vehicle design.

6-25. MTD25: In-Stride Obstacle

Avoidance/Breaching Mounted systems must possess the mobility and agility to dominate the maneuver battle. They must be able to maneuver unimpeded across the battlefield and deliver decisive blows against the threat. The mounted force must be able to quickly detect, breach, and cross man-made and natural obstacles on the battlefield. This will require innovative improvements to suspension systems, drive systems and vehicular design. Fuel efficiency must also be improved.

6-26. MTD26: Power Generation. Improved electrical generation, storage and conditioning capabilities are required to enhance vehicle propulsion and to support such new capabilities as electromagnetic guns and directed energy weapons.

6-27. MTD27: Battle Planning/Rehearsal. Advanced, interactive trainers for mounted air and ground force technologies must possess the ability to conduct simultaneous interactive training for the total force. Training capabilities must be designed for and integrated into systems developed to meet all desired battlefield capabilities. The capability to conduct advanced virtual prototyping with a networking capability is essential. Simulations should have the dual capability of being an effective training tool as well as providing the ability to evaluate concepts and evolving technologies. Systems must be capable of supporting combat operations as well as training operations.

6-28. MTD 28: Expanded Battlefield. The expanded battlefield dictates the necessity to move long distances to launch attacks and to occupy reconstitution areas. The capability to lift and transport mounted systems, fire support systems, air defense systems, engineer equipment, and sustainment materials is essential.

6-29. MTD 29: Mobility and Agility. Mounted systems must possess the mobility to dominate the maneuver battle. They must be able to maneuver unimpeded across the battlefield and deliver decisive blows against the threat. The mounted force must be able to quickly detect, breach, and cross man-made and natural obstacles on the battlefield. This will require innovative improvements to suspension systems, drive systems and vehicular design. Fuel efficiency must also be improved.

6-30. MTD 30: Simulation. Advanced Distributed Interactive simulation (DIS) for the development, improvement, testing, training, and validation of DTLOMS issues. Advanced distributed simulations are required using manned simulators, reconfigurable manned simulators, computer generated forces, and interactive linking between and evolution of concepts and user requirements. This includes the development of intelligent computer generated forces which have the flexibility of portraying operational environments and should include the representation of forces, environment, and situations representing Operations Other Than War (OOTW).

6-31. MTD 31: NBC Decontamination. Improvements are required in the capability to safely and rapidly decontaminate vehicles and equipment in order to meet current and future threats.

Chapter 7

Early Entry Lethality and Survivability Battle Lab Operational Capability Requirements

7-1. EEL01: Stop Modernized Threat Forces. Early Entry forces must be able to stop modernized threat forces in a wide variety of environments, hold the lodgment areas for arrival of follow-on forces and survive (to include weapons of mass destruction) to conduct follow-on operations.

7-2. EEL02: Precision Munitions for Early Entry: Employ precision munitions (lethal/nonlethal) that minimize collateral and human damage in support of operations from Operations Other Than War (OOTW) to Med/High Intensity.

7-3. EEL03: Drop Zone Assembly: Rapidly assemble forces on the Drop Zone as part of Forced Entry Operations and quickly link personnel with combat/combat support equipment and reduce the time required to employ it in forced entry operations.

7-4. EEL04: Suppressive Fire From Assault Helicopters: Provide effective suppressive fires, including smoke, from assault helicopters with organic weapons.

7-5. EEL05: Precision Counter Mortar: Employ precision counter mortar fire during Operations Other Than War/Military Operations in Urbanized Terrain (OOTW/MOUT) operations.

7-6. EEL06: Identify and Engage Deep Targets with Early Entry Forces: Rapidly identify deep targets and engage them with lethal systems in a variety of environments.

7-7. EEL07: Non-lethal Munitions: Employ non-lethal munitions and other nonlethal methods in support of Operations Other Than War (OOTW) to minimize collateral damage and casualties. Requirement is needed to avoid undue loss of life and also to avoid adverse world/public opinion.

7-8. EEL08: Counter Mine Operations. Employ robotic sensor scout. Remotely detect, positively and indelibly mark lanes and neutralize explosives, demolitions, conventional and chemical mines and booby traps in early entry operations. Optimize information-based technologies, while minimizing soldier-in-the-loop and maximizing soldier safety.

7-9. EEL09: Soldier/Equipment Protection. Rapidly install highly deployable soldier/equipment protection systems and protective shelters against Nuclear Biological and Chemical (NBC) agent exposure, small arms, blast, and fragmentation effects of indirect fire weapons (120mm and below).

7-10. EEL10: Soldier/Equipment Camouflage. Rapidly camouflage soldiers and equipment employing adaptive techniques to achieve physical and electromagnetic nondetection in a variety of topographic environments.

7-11. EEL11: Deception and Decoy Capabilities. Install highly deployable, versatile (against the widest possible range of topographic environments) deception and decoy systems. To present visual, acoustic, and thermal signatures (including smoke) in order to mask and mislead the threat concerning the deployment of early entry forces.

7-12. EEL12: Situational Awareness. Early entry forces require the ability to rapidly deploy and employ an instantly established communications system having a smart networking capability, automatically routing traffic and not reliant upon an area microwave or multichannel system carrier. The system should be compatible and interoperative with

enroute C4I capability to provide uninterrupted links with National Command Authority (NCA), Joint Chiefs of Staff (JCS) and the Joint Task Force Commander (JTFC) from notification through arrival in the contingency area of operations.

7-13. EEL13: Real Time Targeting. Early entry forces require the ability to receive and integrate real time targeting data from advanced target detection systems, including spaced based early entry warning systems, into fire direction centers, allowing immediate response to the commander's attack criteria and to provide effective lethal fires immediately upon arrival.

7-14. EEL14: Identify and Locate Nontraditional Signatures. Locate and identify threat forces that do not exhibit traditional electromagnetic signatures. Defeat or degrade localized threat C2/C4I electronic systems, maximizing friendly and minimizing threat Situational awareness. Ability required to blackout and/or totally disrupt enemy C4I and fire support systems.

7-15. EEL15: Airspace Deconfliction. Require the ability to conduct automatic airspace deconfliction and management in order to reduce fratricide, improve situational awareness, and allow for dynamic adjustment of missions.

7-16. EEL16: Space Based Early Warning. Rapidly deploy a system capable of receiving, processing and disseminating space-based early warning to provide targeting data to weapon systems against air breathers, TBMs, airborne platforms (i.e. UAV and fixed/rotary wing aircraft) and space-based attacks.

7-17. EEL17: Interface With Joint Digitized Force. Interface with joint forces possessing digitized equipment in support of decisive combat operations.

7-18. EEL18: Rapid Supply/Resupply of Early Entry Forces. Rapidly deploy and move resources to and within the theater and to operate in and from unimproved areas.

7-19. EEL19: Real-Time Adjustments to Deployment. Implement rapid, real-time adjustments to deployment plans during execution of early entry operations. Maintain real time, the visibility of deploying assets.

7-20. EEL20: Rapid Insertion of Army Aviation. Improve the ability to self-deploy or preposition Army Aviation assets for rapid insertion into an early entry operation.

7-21. EEL21: Host/Nearby Nation Support. Plan for, train and exploit the use of host nation and/or nearby-nation resources.

7-22. EEL22: Deploy Active Component (AC)/Reserve Component (RC) Forces. Quickly deploy appropriate AC/RC mix of forces to conduct and sustain early entry operations.

7-23. EEL23: Logistics Over-The-Shore (LOTS). Conduct LOTS and Austere port operations with Army watercraft in Sea State 3 condition.

7-24. EEL24: Vessel Discharge: The Army requires the capability to discharge containers and other cargo (vehicles/breakbulk cargo) from vessels anchored "in-stream" to Army lighterage, roll-on, roll-off discharge platforms (RRDF), and causeway systems in sea state three (SS3) conditions and below. This capability is crucial to enable the Army to meet force projection responsibilities. Additionally, a solution to correct the violent motion of lighterage alongside the ship being discharged must be solved to allow discharge in SS3.

7-25. EEL25: Constructive Simulations. Conduct Early Entry/OOTW scenario in constructive simulations.

7-26. EEL26: Rescue Operations. Train OOTW/hostage rescue operations in virtual reality and constructive simulations.

Appendix A
OCR Crosswalk Matrices

ARMY MODERNIZATION OBJECTIVES

	DOMINATE MANEUVER	WIN INFO WAR	PRECISION STRIKE	PROTECT THE FORCE	PROJECT & SUSTAIN
BATTLE COMMAND	BC02 BC04 BC06 BC07 BC08 BC09* BC10 BC12 BC14 BC17	ALL BATTLE COMMAND OCRs	BC01* BC02 BC03 BC06* BC07 BC08* BC09 BC10 BC13* BC14 BC17 BC20	BC01* BC06 BC08 BC09 BC13* BC17 BC18* BC21* BC22*	BC02 BC04* BC06* BC07* BC09 BC10 BC13 BC14 BC18 BC20 BC21
COMBAT SERVICE SUPPORT	CSS05 CSS06 CSS10 CSS12 CSS25*	CSS02 CSS03 CSS06 CSS07		CSS01* CSS16 CSS04* CSS17 CSS10* CSS18 CSS11* CSS19* CSS12* CSS21* CSS13* CSS22 CSS14* CSS29 CSS15	CSS02 CSS25* CSS03 CSS26 CSS05* CSS27 CSS06* CSS28 CSS07* CSS22 CSS23 CSS24
DEPTH & SIMULT. ATTACK	DSA07 DSA08 DSA09* DSA10 DSA13 DSA14 DSA19 DSA20 DSA21* DSA22	DSA07 DSA14 DSA08 DSA15 DSA09* DSA16 DSA10* DSA17 DSA11 DSA18 DSA12* DSA19 DSA13 DSA20* DSA14 DSA15 DSA16 DSA17 DSA18 DSA19 DS20*	DSA01* DSA11* DSA02* DSA12 DSA03* DSA14 DSA05 DSA15* DSA06 DSA16 DSA07* DSA17 DSA09* DSA19 DSA10*	DSA01 DSA02* DSA04* DSA05* DSA06* DSA09 DSA14 DSA17 DSA21* DSA22*	DSA03 DSA19 DSA21* DSA22

* Significant Impact on Battlefield Dynamic

ARMY MODERNIZATION OBJECTIVES

DISMOUNTED BATTLE SPACE

MOUNTED BATTLE SPACE

EARLY ENTRY LETHALITY & SURVIV.

DOMINATE MANEUVER	WIN INFO WAR	PRECISION STRIKE	PROTECT THE FORCE	PROJECT & SUSTAIN
DBS01A DBS02A DBS03 DBS11 DBS15 DBS16 DBS17 DBS18 DBS22 DBS23 DBS24 DBS25	DBS03 DBS08* DBS09* DBS10 DBS11 DBS12 DBS13 DBS14 DBS18 DBS19 DBS20 DBS21	DBS05* DBS15 DBS16 DBS20	DBS01A DBS03 DBS05A DBS07* DBS08* DBS09* DBS10 DBS14	DBS11* DBS19 DBS24 DBS25*
MTD01* MTD22 MTD02* MTD25* MTD03 MTD26* MTD04 MTD27 MTD05 MTD28 MTD09* MTD29 MTD11 MTD30 MTD17 MTD19 MTD20	MTD03 MTD06 MTD07 MTD11 MTD18 MTD19* MTD20* MTD21* MTD22* MTD23 MTD24	MTD05 MTD18 MTD19 MTD22	MTD01 MTD16 MTD04 MTD17 MTD07* MTD08* MTD09 MTD10* MTD11* MTD12* MTD13* MTD14 MTD15*	MTD25 MTD27 MTS28* MTD29* MTD30*
EEL01 EEL02 EEL04* EEL17* EEL20*	EEL06 EEL12 EEL13 EEL14 EEL17	EEL02* EEL05* EEL06 EEL13*	EEL01 EEL02 EEL04 EEL05 EEL08* EEL09* EEL10* EEL11* EEL16 EEL26*	EEL03 EEL12 EEL15 EEL18* EEL19* EEL20 EEL21* EEL22 EEL23* EEL24

Appendix B OCR Keywords Index

Accounting Support, CSS25.

Acquisition

Avoidance

Dismounted Soldiers, DBS09

Mounted, MTD07; MTD07; MTD11;
MTD17

Signal Interception, BC19.

Enhanced, MTD11.

Extended Range, DBS14; MTD03.

Information Dissemination, Vertical and
Horizontal, DBS13.

Integrated Target, DBS13.

Non-Traditional Signatures, EEL14

Passive Targets, DSA14.

Sensor-To-Shooter Linkages, DBS13.

Weapons Pointing and Control, DBS16.

Active Defense

Warning and Alerting, TBM, DSA05

Mounted Forces

Counter-Beam, MTD10

Counter-projectiles, MTD10

Counter-Munitions, MTD10

Advanced Fire Control

Dismounted Soldiers, DBS02A

Airborne Operations

Drop Zone Assembly, Rapid, EEL03

Airdrop,

Enhanced Capabilities for, CSS05

Tactical Dismounted Mobility, DBS23.

Airspace

Coordination, DSA18

Deconfliction, DSA18; EEL15

Air Defense

Early Entry Forces, EEL16

Armor Enhancements

Deep Attack Systems, DSA05

Artificial Intelligence, BC02; DSA16; MTD18.

Assets Visibility

Automated Identification Technology, CSS02

Distribution Management, CSS07

Deployment, EEL19

In-Transit Visibility, CSS06

Stockage Visibility, CSS06

Automated Identification Technology (AIT), CSS02

Automated Target Recognition

Computing to Support, BC03

Automation Technologies

Command Post Functions, MTD21.

Linkage to Communications, CSS02, CSS03

Mounted Forces, MTD18.

Real Time Network Management, BC08.

Aviation, Army

Active Defense and Countermeasures, MTD10.

Advanced Propulsion Systems, MTD09.

Hit Avoidance, MTD09.

Patient Evacuation, CSS11

Penetration and Kill Avoidance, MTD10.

Rapid Insertion, EEL20

Self-Deployment, EEL20

Search and Rescue, CSS11

Signature Reduction, MTD09.

Situational Awareness, EEL15

Suppressive Fires, Assault Helicopters, EEL04.

Threat Prioritization, MTD10; MTD11.

Warning Systems, MTD09.

Ballistics

Enhanced, DBS02A; MTD03.

Protection

Deep Attack Systems, DSA16

Dismounted Soldiers, DBS06, DBS08

Mounted Forces, MTD10

Battlefield Damage Assessment, BC01; DBS12;
DSA13.

Battle Tempo, Increased Control of, DBS17.

Brilliant Munitions, DSA03

Camouflage

Adaptive, EEL10

Advanced Conventional, DBS09; EEL10

Multi-Spectral, DBS09; EEL10

Casualty

Evacuation, CSS11; MTD14.

Location, CSS12.

Chemical Energy Munitions, Enhanced, MTD01.

Clothing

Field Cleaning, CSS23.

Field Repair, CSS23.

Improved, CSS23.

Combat Stress Control, CSS18.

Command and Control

Battle Tempo, DBS17.

High Speed Computing to Support,
BC03, CSS04

Miniaturization of Hardware to Support, BC04.

On-The-Move, BC09; MTD20.

User Friendly Systems to Support, BC05.

Commander

Decision Support, BC02.

Information Displays, BC14.

Operations On The Move, BC09; MTD20.

Training, BC02; BC16.

Command Posts, MTD21.

Automated Functions, MTD21.

Battle Damage Assessments, BC01; DBS12;
DSA13.

Collective NBC Crew Protection, MTD16.
 Decoys, BC22.
 Displays, BC14.
 Interactive Devices, BC15.
 Survivable, Mobile, Stealthy, MTD21.
Communications, BC06; BC10.
 Adaptive Architecture, BC06.
 Adaptive Networking, BC09.
 Assured CSS, CSS03.
 Automated Linkages, DSA15; EEL12.
 Automatic Routing, BC07; EEL12.
 Dismounted Soldier, DBS21.
 Encryption, BC18.
 Flexible Ranges, BC09.
 Integrated Commercial and Tactical, BC06.
 Interoperability, BC07; DSA15; DSA19;
 EEL12.
 Medical Diagnostics, Advanced, CSS14;
 CSS20.
 Miniaturized Equipment, BC04.
 Mounted Forces, MTD18.
 Network Management, BC08.
 Range Extension, BC06.
 Seamless, Secure, Global Information
Architecture, BC06; DBS21.
 Survivable, BC17.
 Terrain Independent, DSA20; EEL12.
 Uninterrupted Links, CONUS-to-Area of
 Operations, EEL12.
Computing
 High Speed, BC03.
 Contamination Avoidance, MTD12.
Containers
 Advanced Containerization, CSS08.
 Decontamination, CSS08.
 Deep Attack, DSA16.
 Forward Area Hauling, CSS26
 Graphics, Displays, BC14.
 Logistics Planning and Management, CSS28.
 Support, BC02.
 Training, BC16.
Decontamination
 Clothing, CSS23.
 Equipment, CSS23.
 Personnel, CSS23.
 Packaging, CSS08.
 Patient, CSS12; CSS15.
 Decoys, BC22; EEL11.
Deep Attack
 Early Entry Forces, EEL06.
 Extended Ranges, DSA01.
 Systems Survivability, DSA05.
 Deep Operations Coordination Cell, DSA17.
 Defilade, Create, MTD08.

Dental, CSS17.
Deployability, Rapid
 Surface-to-Surface Systems, DSA21.
 Surface-to-Air Systems, DSA21.
Deployment
 Aviation, EEL20.
 Assets Visibility, EEL19.
 Real-Time Adjustments, CSS20, EEL19.
 Reserve Component, EEL22.
Detection
 Avoidance/Countermeasures
 Adaptive, EEL10.
 Dismounted Soldiers, DBS08; DBS09;
 EEL10.
 Deep Attack Systems, DSA05.
 Equipment, EEL10.
 Mounted, MTD07; MTD17.
 Signal Interception, BC19.
 Signal Time Reduction, BC21.
 Enhanced, MTD10.
Digital Data/Digitization
 Compression, BC21.
 Database Management, BC03.
 Dismounted Soldier, DBS20.
 Interfaces, CSS02, CSS04.
 Fusion, BC03.
 Mounted Forces, MTD19.
 Transmission Enhancements, BC03.
 Throughput Rates/Volume, BC20; MTD20.
Digitized Mapping
 Deep Attack Systems, DSA07.
Directed Energy
 Exposure Performance Assessments, CSS16.
Injuries
 Identification, CSS16.
 Treatment, CSS16.
 Protection, DBS06, MTD13, CSS16.
 Weapons, Enhanced, MTD01; MTD03.
Disease,
 Preventive Medicine, CSS01.
 Rapid Identification, CSS01; CSS21.
 Surveillance, CSS01; CSS21.
 Dismounted, All DBS OCS
 Displays, BC14.
 Large Screen Displays, BC15.
Drop Zone
 Intelligence, DBS11
 Rapid Assembly Aids, EEL03.
Electromagnetic Effects
 Protection, Dismounted Soldier, DBS06.
 Electromagnetic Gun, MTD01.
 Electronic Combat, EEL14.

Engage

Deep Attack Targets, Early Entry Forces,

EEL06.

Moving Targets, DBS01A; MTD02.

Stationary Targets, DBS01A; MTD02.

Engagement

Avoidance, Dismounted Soldiers, DBS08

Ranges, Extended, DBS07

Enhanced Munitions

Dismounted, DBS02A

Deep Attack, DSA03

Environmental

Control Systems

NBC Protection Integrated, MTD16; CSS12,

CSS15, CSS20.

Reduced Space, Weight, and Power, MTD16.

Surgical Shelter Systems, CSS10; CSS20.

Monitoring, CSS01

Finance Support, CSS24.

Firepower

Mounted Forces, MTD01

Fire Control/Direction Centers

Battle Damage Assessments, BC01; DBS12;

DSA13.

Enhanced, Mounted Forces, MTD03; MTD05.

Early Entry Forces, EEL12

Forward Area Air Defense, DSA02

Fragmentation Protection, DBS08

Fratricide Avoidance

Aircraft, EEL15

Deep Attack Systems, DSA06

Mounted Forces, MTD15

Fuel

Analysis, CSS26.

Improved, CSS26.

Distribution, CSS26.

Rapid Refuel Capabilities, CSS26.

Hit Avoidance, MTD09

Identification, Combat

Deep Attack Targets, Early Entry Forces,

EEL06

Dismounted Soldier, DBS07

Enhanced Range of, MTD15

Fratricide Avoidance, DSA06; MTD15

Integrated Into Weapons Pointing and Control,

DBS16.

Mounted Forces, MTD11; MTD15

Passive Targets, DSA14

Target, Real-time, DSA09

Indirect Fires

Dismounted, DBS05A

Individual Protective Equipment, MTD13

Information, BC06; BC13.

Awareness, DBS03AB; MTD03.

Allowing Control of Battle Tempo, DBS17.

Collection, BC01.

Communicate Tactical, BC10.

Correlation, BC03.

Digitized, EEL17; MTD19.

Dissemination, DBS21; DSA10; MTD18.

Displays, BC14.

Filtering, BC03.

Fusion, DSA17; DBS18.

Medical, CSS14; CSS02; CSS20.

On-The-Move, BC09.

Processing, BC02; BC03.

Relevant Common Picture, BC13.

Routing, BC03.

Seamless, Secure, Global Architecture, BC06

Securing, BC04.

Sensor, BC01.

Storage, High-Capacity, BC03; BC04.

Sustainment, CSS26.

Throughput, BC20

Virus Protection, BC17.

Information Warfare, EEL14; BC17.

Injuries

Battle, Treatment, DBS07

Non-Battle, Protection, DBS06

Intelligence

Awareness, DBS03AB; DBS07; DBS10;

MTD03.

Counter-, MTD11

Dissemination, DSA10

Fusion, DSA17

Mounted Forces, MTD06.

Interoperability, BC07.

Automated, DSA15

Coalition Forces, DSA17; MTD18.

Digitized Forces, EEL17

Enroute Deployment, EEL12

Joint Forces, DSA19; EEL17; MTD18.

In-Transit Visibility

General, CSS06.

Medical, CSS13.

Joint Precision Strike, DSA08

Kill Avoidance, MTD10

Kinetic Energy Kill Mechanisms, Enhanced,

MTD01

Landing Zones Intelligence, DBS11.

Lethality

Enhanced, Mounted Forces, MTD01.

Extended Ranges, MTD02.

Precision, EEL02

Provide Overmatch To Defeat

Armor, DBS02A; MTD02.

Bunkers, DBS02A; MTD02.

Fixed Wing Aircraft, DBS02A; MTD02.

Personnel, DBS02A; MTD02.
 Rotary Wing Aircraft, DBS02A; MTD02.
 Thin-skinned Vehicles, DBS02A; MTD02.

Location
 Avoidance, Dismounted, DBS08
 Casualty, CSS12
 Targets, DBS 16; MTD11
 Passive Targets, DSA14
 Precision, DSA07
 Logistics
 Combat Health and Blood Management, CSS13.
 Command, Control, Communications, and Automation, CSS02.
 Force Design, CSS26.
 Logistics-Over-The-Shore (LOTS), EEL23
 Long Dwell Surveillance, DSA11
 Low Observable Technology, DBS09; MTD07.
 Low Probability of Intercept/Detection, BC19; BC21.

Mapping
 Digitized, DSA07
 Common Coordinates, DSA07
 Man-Machine Interfaces, Natural, BC11.
 Mass Fires Without Massing Forces, DBS13.
 Materiel Handling Equipment, CSS05; CSS08

Medical
 Advanced Diagnostics Communications, Command, Control, Communications, Computers, and Intelligence, CSS04
 Casualty Care, CSS04; CSS12.
 Evacuation, MTD14; CSS11
 Far-Forward Surgical Support, CSS10
 Laboratory Support, CSS21.
 Survivability, MTD14
 Treatment, CSS12

Military Operations Urban Terrain (MOUT)
 Precision Counter Mortar, EEL05

Mines
 Autonomous Operation, MTD04
 Detection, EEL08
 Dismounted, DBS04A
 Marking, EEL08
 Sensors, MTD04
 Smart and Intelligent, MTD04
 Wide Area, MTD04

Miniaturization, BC04.

Mission
 Deployment Planning Adjustments, EEL19
 Dynamic Adjustment, Aircraft, EEL14
 Rehearsal Support, BC02; DBS19.

Mobility, Enhanced
 Dismounted Soldiers, DBS22; DBS23; DBS24.
 Logistics, CSS05
 Materiel Handling Equipment, CSS05

Mounted Forces, MTD09
 Surface-to-Air Systems, DSA22
 Surface-to-Surface Systems, DSA22
 Multi-Node Processing, DSA08

Munitions,
 Brilliant, DSA03.
 Dismounted, Enhanced, DBS02A
 Deep Attack, Enhanced, DSA03
 Improved, MTD05.
 Non-Lethal, EEL07

Networking,
 Adaptive Architecture, BC06.
 Adaptive Network, BC09.
 Management, BC08

Non-Lethal Capabilities
 Dismounted, DBS02B
 Early Entry Forces, EEL02; EEL07

Nuclear, Biological, Chemical (NBC) Agents
 Collective Crew Protection, MTD16
 Detection Capability, Enhanced, MTD12
 Preventive Measures, CSS02
 Warning System, MTD12

Night Vision
 Tactical Wheeled Vehicle Fleet, CSS05

Obstacles
 Rapid Breaching, DBS22.
 Situational Awareness, MTD22

Operational Security, Mounted Forces, MTD11.

Operations-On-The-Move
 Capabilities, BC09.
 Monitoring, MTD20.
 Planning, MTD20.
 Training, BC16.

Operations Other Than War (OOTW)
 CSS Peacetime Operations, CSS09, CSS11, CSS12, CSS21.
 Counter Mortar, Precision, EEL05
 Early Entry Capabilities, EEL02
 Simulations, EEL25

Overmatch
 Direct Fires, DBS01A
 Indirect Fires, DBS01A

Packaging, Improved, CSS08

Passive Targets
 Detection, BC01.
 Location, DSA14.

Patient Evacuation, CSS11

Personal Digital Assistants, CSS02; CSS24.

Planning
 Aids, BC02; DSA16.
 Automated, DBS19.
 Courses of Action Assessments, BC13.
 Continuous, On-The-Move, BC09; MTD20.
 Deployment

Rapid Adjustment, EEL19
 Active Component/Reserve Component
 Mix, EEL22
 Host/Near Nation Support, EEL21
 Logistics, Interactive, CSS29.
 Peacekeeping , CSS09; CSS12; DBS02B; EEL07.
 Port Operations, EEL24
 Power Sources
 Advanced, Non-Traditional, CSS26.
 Batteries, CSS25.
 Conditioning, CSS25.
 Smaller, Lighter, More Energetic, CSS25.
 Precision Guided Munitions, MTD05
 Precision Location
 Deep Attack Systems, DSA07
 Indirect Fire Systems, DSAS07
 Precision
 Counter Mortar Fires, EEL05
 Munitions for Early Entry Forces, EEL02
 Strike
 Information Fusion, DSA17
 Prevention
 Battle Injuries, CSS01, DBS07.
 Non-Battle Injuries, DBS07
 Preventive Medicine
 Biological Warfare Agent, CSS01
 Chemical Warfare Agent, CSS01
 Endemic Diseases, CSS01
 Environmental Injuries, CSS01
 Environmental Monitoring, CSS01
 Occupational Injuries, CSS01
 Vector Control, CSS01
 Propulsion, Advanced, Mounted Forces, MTD09
 Protection
 Air Defense, EEL16
 Ballistic
 Dismounted Soldier, DBS06; DBS08;
 EEL09
 Mounted Forces, MTD10; MTD13
 Chemical Energy Mechanisms, MTD10
 Computer Virus, BC17.
 Directed Energy
 Dismounted Soldier, DBS06
 Mounted Forces, CSS16, MTD13
 Patients, MTD14
 Electromagnetic Effects
 Dismounted Soldier, DBS06;
 Extreme Environments, Patient, MTD14
 Dismounted Soldier, DBS06
 Fragmentation, DBS08; EEL09
 Indirect Fire, EEL09
 Kinetic Energy Mechanisms, MTD10
 Overpressure Effects, MTD10
 Patient, MTD14

NBC Agents, CSS02; MTD13; MTD14
 Rapid, EEL09
 Shelter (Small Arms, Blast, Fragmentation),
 EEL09
 Thermal Effects, MTD10
 Weapons of Mass Destruction, EEL01
 Quality of Life, Improved
 Soldiers, In Field, CSS23.
 Rations, Improved, CSS23.
 Real Time Targeting, DSA08; DSA09; DSA10;
 DSA11; DSA12; DSA13; DSA14
 Reconnaissance
 Enhanced, Mounted Forces, MTD11.
 Reduce Soldier Loading, DBS21; DBS24; DBS25.
 Rehearsal, Mission, BC02; DBS10.
 Relevant Common Picture, BC13.
 Resuscitation, CSS12.
 Robotic
 Materiel Handling Equipment, CSS05
 Mine Detection, EEL08
 Sensors, MTD23.
 Search and Rescue, CSS11
 Sensor Data, DSA08; DSA09
 Sensors, BC01
 All Terrain, DSA12
 All Weather, DSA12; MTD23.
 Day/Night, DSA12
 Integration of, BC01; MTD23.
 Long Dwell, DSA11
 Netted, BC01
 NBC Agent, MTD12
 Mine, MTD04
 Sensor-To-Shooter Linkages, DBS14; DBS15;
 Shelter(s), CSS23.
 NBC Protected Medical, CSS15.
 Rapid Ballistic, Fragmentation, Direct Fire,
 EEL09
 Systems, Surgical, CSS10
 Tentage Heating, CSS22.
 Signal Security, MTD11; BC18; BC19; BC21.
 Signature Reduction, BC19; BC21; DBS08; DBS09;
 MTD07; MTD09
 Simulations,
 Constructive, EEL25; EEL26
 Decision Support, BC02.
 Logistics, CSS29.
 Mission Rehearsal, BC02.
 Patient Modeling, CSS29.
 Training Support, BC02.
 Virtual Reality, EEL26.
 Situational Awareness, BC13.
 Aircraft, EEL15
 Battle Command, BC01
 Combat Services Support, CSS02, CSS03.

Displays, BC14.
 Dismounted Soldiers, DBS10.
 Drop Zone/Landing Zone Intelligence, DBS11.
 Early Entry Forces, EEL12
 Mounted Forces CSS04, CSS10, CSS11,
 MTD15; MTD21.
 Smart Munitions, DSA03
 Smart Networking, Communications, EEL12
 Smoke
 Assault Helicopter, EEL04
 Enhanced Smoke Materials, MTD17
 Enhanced Delivery Systems, MTD17
 Minimize Friendly Interference, MTD17
 Software Compatibility, DBS18.
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Day/Night, DBS16.

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Glossary
Section I
Abbreviations

AC Acquisition Corps
ACM Advanced Concept Manager
ACT II Advanced Concepts and Technology II
ACTD Advanced Concepts and Technology Demonstration
AERS Army Education Requirements System
AES Army Experimentation Site
AESO Army Experimentation Site Officer
AIEP Army Ideas for Excellence Program
AIT Automatic Identification Technology
AMC U.S. Army Materiel Command
AMCD4 Advanced Medical Diagnostics Communications for Combat Casualty
AMMED Army Medical Department
AMP Army Modernization Plan
AMSAA U.S. Army Materiel Systems Analysis Agency
AO Area of Operation
AOR Area Of Responsibility
ARI U.S. Army Research Institute
ARL U.S. Army Research Lab
ARO U.S. Army Research Office
ARPA Advanced Research Projects Agency
ASTMP Army Science and Technology Master Plan
ASTWG Army Science and Technology Working Group
ATD Advanced Technology Demonstration
AWE Advanced Warfighting Experiment
BAA Broad Agency Announcement
BAG Budget Aggregate Group
BC Battle Command
BC(G) Battle Command (Gordon)
BC(H) Battle Command (Huachuca)
BC(L) Battle Command (Leavenworth)
BLEP Battle Lab Experiment Plan
BLESOR Battle Lab Experiment Senior Officer Review
BLITCD Battle Lab Integration, Technology, and Concepts Directorate
BLSE Battle Lab Support Element
BLWE Battle Lab Warfighting Experiment

BoD Board of Directors
BTT Battle Lab Technology Teams
C2 Command and Control
C2V Command and Control Vehicle
C2W Command and Control Warfare
C4I Command, Control, Communications, Computers, and Intelligence
CALL Center for Army Lessons Learned
CEAC Cost Evaluation and Analysis Center
CEP Concept Evaluation Program
CEPSARC Concept Evaluation Plan Schedule and Review Committee
CG Commanding General
CHLS Combat Health Logistics System
CINC Commander in Chief
COIC Critical Operational Issue Criteria
CONUS Continental United States
C-RISTA Counter-Reconnaissance, Intelligence, and Target Acquisition
CS Combat Support
CSS Combat Service Support
CTC Combat Training Center
D&SA Depth and Simultaneous Attack
DA Department of the Army
DASA(RT) Deputy Assistant Secretary of the Army for Research and Technology
DBS Dismounted Battle Space
DCD Director for Combat Developments
DCSDOC Deputy Chief of Staff for Doctrine
DCSOPS Deputy Chief of Staff for Operations and Plans
DCST Deputy Chief of Staff for Training
DE Directed Energy
DFBS Defense Finance Battlefield System
DIS Distributed Interactive Simulation
DTLOMS Doctrine, Training, Leadership, Organization, Materiel, and Soldiers
DZ Drop Zone
EAC Echelons Above Corps
ECBRS Enhanced Concept Based Requirements System
ECC Experiment Concept Committee
EELS Early Entry, Lethality, and Survivability
EMP Electro Magnetic Pulse
FLIR Forward Looking Infrared Radar
FOA Field Operating Agency
FORSCOM U.S. Army Forces Command
FTW Future Technology Workshop
GICOD Good Idea Cut Off Date

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HQDA	Headquarters, Department of the Army	PAO	Public Affairs Officer
IAW	In Accordance With	PAT	Process Action Team
IEW	Intelligence and Electronics Warfare	PCS	Personal Communications System
IPL	Integrated Priority List	PEO	Program Executive Officer
IPPT	Integrated Process and Product Team	PERSCOM	U.S. Army Personnel Command
IR&D	Independent Research and Development	PM	Program Manager
JCS	Joint Chiefs of Staff	POC	Point of Contact
JTFC	Joint Task Force Commander	POI	Programs of Instruction
LAM	Louisiana Maneuvers	POM	Program Objective Memorandum
LO	Liasion Officer	PPBES	Planning, Program, Budgeting, and Execution System
LOT S	Logistics Over the Shore	RC	Reserve Component
LZ	Landing Zone	R&D	Research and Development
LRRDAP	Long Range Research, Development, and Acquisition Plan	RDEC	Research, Development, and Engineering Center
MACOM	Major Army Command	RDTE	Research, Development, Test and Evaluation
MBS	Mounted Battle Space	RIMS	Research and Development Information Management System
MDEP	Management Decision Package	RODP	Roll-Off Discharge Platform
MEL	Military Education Level	S&T	Science and Technology
MEDEVAC	Medical Evacuation	SAMS	School of Advanced Military Studies
MHE	Materiel Handling Equipment	SATCOM	Satellite Communications
MOA	Memorandum of Agreement	SIGSEC	Signal Security
MOU	Memorandum of Understanding	SITREP	Situation Report
MOUT	Military Operations in Urbanized Terrain	SME	Subject Matter Expert
MRDALC	Medical, Research, Development , Acquisiton, and Logistics Command	SOF	Special Operation Forces
NBC	Nuclear, Biological and Chemical	SOP	Standing Operating Procedures
NCA	National Command Authority	SOR	Senior Officer Review
NDI	Non-Developmental Items	SS3	Sea State 3
NGIC	National Guard Intelligence Center	SSDC	Space and Strategic Defense Command
NMS	National Military Strategy	STO	Science and Technology Objective
OCR	Operational Capability Requirement	TAA	Total Army Analysis
ODCSCD	Office of the Deputy Chief of Staff for Combat Developments	TBG	TRADOC Budget Guidance
ODP	Officer Distribution Plan	TDA	Table of Distribution and Allowances
ODUSA(OR)	Office of the Deputy Under Secretary of the Army for Operations Research	TDAD	Training Development and Analysis Directorate
OMA	Operations and Maintenance, Army	TBM	Theater Ballistic Missile
OML	Order of Merit List	TECO	Test and Evaluation Coordination Officer
OOTW	Operations Other Than War	TM	Threat Manager
OPFOR	Opposing Force	TOE	Table of Organization and Equipment
OPSEC	Operations Security	TRADOC	U.S. Training and Doctrine Command
OPTEC	U.S. Army Operational Test and Evaluation Command	TSARC	Test Schedule and Review Committee
ORSA	Operations Research and Systems Analyst	TTP	Tactics, Techniques, and Procedures
OV/VM	Office Vision/Virtual Machine	TWV	Tactical Wheeled Vehicle
PAM	Pamphlet	USPACOM	United States Pacific Command
		UAV	Unmanned Aerial Vehicle
		VTC	Video Teleconference Center

WFLA Warfighting Lens Analysis
WMD Weapons of Mass Destruction

Section II

Terms

Battle Command

The art of decision making, leading, and motivating soldiers and their organizations into action missions; includes visualizing current state and future state, then formulating concepts of operations to get from one to another at least cost; also, includes assigning missions, prioritizing and allocating resources, selecting the critical time and place to act, and knowing how and when to make adjustments during the fight.

Battle Dynamics

Five major interrelated dynamics that define significant areas of change from current operations to Force XXI Operations; dynamics are Battle Command, Battle Space, Depth and Simultaneous Attack, Early Entry Lethality and Survivability, and Combat Service Support.

Battle Space

Components of this space are determined by the maximum capabilities of friendly and enemy forces to acquire and dominate each other by fires and maneuver and in the electromagnetic spectrum.

Combat Service Support

The essential logistics functions, activities, and tasks, necessary to sustain all elements of an operating force in an area of operations.

Command and Control Warfare

The integrated use of operations security, military deception, psychological operations, electronic warfare, and physical destruction manually supported by intelligence to deny information to, to influence, or to degrade adversary command and control capabilities while protecting friendly command and control capabilities against such actions; command and control warfare applies across the full range of military operations and all levels of war.

Depth and Simultaneous Attack

The simultaneous application of combat power against an enemy throughout the depth and breadth of the battlefield; objective goes beyond defeating the enemy; objective is to accelerate enemy defeat.

Early Entry Operations

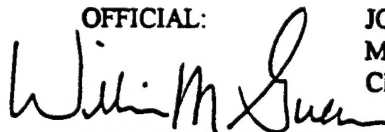
Operations involving the initial deploying forces, they occur whenever the missions require the projection of U.S. forces from the continental United States or else where.

Operations Other Than War

Military activities during peacetime and conflict that do not necessarily involve armed clashes between two organized forces.

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